

**PLASMA IMMERSION ION IMPLANTATION PROCESS USING A  
CAPACITIVELY COUPLED PLASMA SOURCE HAVING LOW DISSOCIATION  
AND LOW MINIMUM PLASMA VOLTAGE**

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**ABSTRACT**

A method for implanting ions in a surface layer of a  
workpiece includes placing the workpiece on a workpiece  
support in a chamber with the surface layer being in facing  
10 relationship with a ceiling of the chamber, thereby defining  
a processing zone between the workpiece and the ceiling, and  
introducing into the chamber a process gas including the  
species to be implanted in the surface layer of the  
workpiece. The method includes generating from the process  
15 gas a plasma by capacitively coupling RF source power across  
the workpiece support and the ceiling or the sidewall from  
an RF source power generator. The method further includes  
applying an RF bias from an RF bias generator to the  
workpiece support.

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